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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/027,642	12/20/2001	Alexandre E. Andreev	01-858	1482

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EXAMINER

WHITMORE, STACY

ART UNIT PAPER NUMBER

2812

DATE MAILED: 10/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/027,642

Applicant(s)

ANDREEV ET AL.

Examiner

Stacy A Whitmore

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 December 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-40 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-29 is/are allowed.
- 6) ☒ Claim(s) 30-34 and 36-40 is/are rejected.
- 7) ☒ Claim(s) 35 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 December 2001 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2,3,4. 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claims 30-34, and 36-40 are rejected under 35 U.S.C. 102(e) as being anticipated by Raspopovic et al. (US Patent 6,230,306)

The applied reference has a common assignee and/or inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

2. As for claim 30, Raspopovic disclosed the invention as claimed, including a method for routing a multi-layered integrated circuit wherein arbitrary routing directions are supported on an arbitrary number of layers of the integrated circuit, comprising: receiving parameters for an integrated circuit having n layers, wherein n is at least two [abstract, col. 23, lines 17-24; col. 24, lines 3-4]; constructing a routing graph for layers of the integrated circuit, the levels partitioned into tiles [col. 23, lines 32-49], wherein at least one edge is provided to join a first tile and a second tile in the routing graph [col. 3,

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lines 32-67], the tiles positioned generally corresponding to a layer grid line of the level [col. 3, lines 32-67]; and routing based on the routing graph [abstract].

3. As for claim 31, Raspopovic disclosed wherein routing nets includes routing nets in a net routing area and routing open nets in all integrated circuit areas [col. 25, lines 61-67, open nets are considered to be nets outside of the bounding box and all areas are included in the expanded bounding box area].

4. As for claim 32, Raspopovic disclosed wherein the parameters include at least one of netlist, grid lines slop, distance between neighboring grid lines, and wire blockage information [col. 23, lines 17-24].

5. As for claim 33, Raspopovic disclosed wherein a tile is a square section, with one side of each tile of the layer directed corresponding to a layer grid line [col. 23, lines 35-49].

6. As for claim 34, Raspopovic disclosed wherein grid lines are positioned generally through a middle of a tile [col. 24, lines 9-26].

7. As for claim 36, Raspopovic disclosed a system for routing a multi-layered integrated circuit, comprising: a memory suitable for storing a program of instructions [col. 36-37; abstract, col. 23, lines 17-24; col. 24, lines 3-4]; and a processor communicatively coupled to the memory, wherein the program of instructions configures the processor to receive parameters for an integrated circuit having n layers, wherein n is at least two [col. 36-37; col. 36-37; abstract, col. 23, lines 17-24; col. 24, lines 3-4]; construct a routing graph for layers of the integrated circuit, the levels partitioned into tiles, wherein at least one edge is provided to join a first tile and a second tile in the routing graph, the tiles positioned generally corresponding to a layer grid line of the level [col. 23, lines 32-49; col. 3, lines 32-67]; and

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route based on the routing graph [abstract].

8. As for claim 37, Raspopovic disclosed wherein routing nets includes routing nets in a net routing area and routing open nets in all integrated circuit areas [col. 25, lines 61-67, open nets are considered to be nets outside of the bounding box and all areas are included in the expanded bounding box area].

9. As for claim 38, Raspopovic disclosed wherein routing nets includes arriving at a set of edges such that any two different pins of the net are connected by the set [col. 7, lines 51-67].

10. As for claim 39, Raspopovic disclosed wherein routing nets includes implementing a procedure to grow neighborhoods [col. 25, lines 23-28].

11. As for claim 40, Raspopovic disclosed a system for routing a multi-layered integrated circuit, comprising:
a means for receiving parameters for an integrated circuit having n layers, wherein n is at least two [col. 36-37; abstract, col. 23, lines 17-24; col. 24, lines 3-4];
a means for constructing a routing graph for layers of the integrated circuit, the levels partitioned into tiles, wherein at least one edge is provided to join a first tile and a second tile in the routing graph, the tiles positioned generally corresponding to a layer grid line of the level [col. 36-37; col. 36-37; abstract, col. 23, lines 17-24; col. 24, lines 3-4]; and
a means for routing based on the routing graph [abstract].

12. Claims 1-29 are allowable over the prior art of record.

13. Claim 35 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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14. The following is a statement of reasons for the indication of allowable subject matter: As for [claims 1-29] the prior art of record fails to teach either singularly or in combination a method for routing including constructing a routing graph, wherein occupancies are added based on previous level net routing (K+1) and calculating penalties of edges, and routing nets based on the routing graph, calculated capacities and added occupancies; and [claim 35], the prior art of record fails to teach either singularly or in combination a method for routing wherein the plane of the layer is divided by parallel lines $((y \cos \alpha_i) + (x \sin \alpha_i)) = j d_i$, $j = 0, +/-1, +/-2, \dots$, where α_i is an inclination of the lines, d_i is the distance between neighboring lines.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stacy A Whitmore whose telephone number is (703) 305-0565. The examiner can normally be reached on Monday-Thursday, alternate Friday 6:30am - 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Niebling can be reached on (703) 308-3325. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Stacy A Whitmore

Patent Examiner

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SAW

